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Evaluation of Diffraction by a Rounded Surface

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Abstract: Wide-angle heliospheric imagers such as those carried on the SMEI and STEREO spacecraft require highly effective baffle systems to exclude diffracted light from the solar disk as well as other sources of stray light. Buffington (2000, Appl. Opt. 39, 2683-2686) has proposed replacing multi-vane baffle systems with a curved surface that can be thought of as the limiting case of closely spaced vanes. Buffington's experimental data showed that the diffractive performance of a continuous baffle is consistent with the limiting form expected from multi-vane diffraction on dimensional grounds, but a detailed prediction was not possible because multi-vane diffraction calculations assume that the diffractive edges act independently, an assumption that breaks down for a continuous surface. I describe analytic calculations of diffraction from a smooth rounded surface based on the approach of Vogler (1985, Radio Sci. 20, 582-590).
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Category (Complete):   15. Instrumentation and techniques
Presentation Preference (Complete): Poster
Additional Information (Complete):
    I am willing to serve as a Chair: Yes
    (1) Area of Expertise: 7. Corona (active regions, loops)
    (2) Area of Expertise: 15. Instrumentation and techniques
    Newsworthy?: No

Status: Complete